

Amendments to the Specification

Please amend the specification as follows:

Please amend the paragraph beginning at page 3, line 12 as follows:

The embossing pattern utilized in the process can be any decorative pattern, such as, for example, a pattern formed of ~~discreet~~ discrete shapes, a reticulated pattern, or some combination thereof. The embossing pattern can generally cover about 2% to about 60% of the total surface area of the embossed sheet. Specifically, the embossing pattern can cover about 5% to about 30% of the total surface area of the embossed sheet.

Please amend the paragraph beginning at page 14, line 24 as follows:

Generally, the process of the present invention can include embossing a visible pattern into base sheet 68. As such, pattern roll 62 can include raised pattern elements. The pattern elements can form any desired decorative pattern in the base sheet. The decorative pattern can be visually recognizable and aesthetically pleasing. The decorative pattern can include straight lines, curved lines, flowers, butterflies, leaves, animals, toys, monograms, words, symbols, and the like. The pattern can be made up of separate discrete shapes or of reticulated grid. The pattern could also be some combination of a reticulated pattern and ~~discreet~~ discrete shapes. In general, the pattern can cover between about 2% and about 60% of the surface area of the sheet. Specifically, the embossing pattern can cover from about 5% to about 30% of the surface area of the sheet. In some embodiments, the embossing pattern can cover up to about 15% of the surface area of the sheet.

Please amend the paragraph beginning at page 15, line 13 as follows:

One possible embodiment of pattern roll 62 is shown in greater detail in Figure 4. The pattern roll 62 can be, for example, a rigid steel roll with the pattern elements formed by engraving or other suitable techniques. As can be seen, the surface of pattern roll 62 includes reticulated raised bonding elements 72 that are separated by

smooth land areas 70. The raised bonding elements 72 are desirably arranged to form a decorative pattern, though the elements could alternatively be ~~discreet~~ discrete elements arranged in a random fashion. Bonding elements 72 can be raised above the surface of the land areas 70 a distance such that the pressure in the embossing nip 60 at the intimate areas of contact between the bonding elements 72 and the base sheet 68 will be sufficient to emboss the base sheet 68 as desired. Generally, bonding elements 72 will be raised above land areas 70 at least about 0.01 inch and particularly from about 0.02 inch to about 0.06 inch.

Please amend the paragraph beginning at page 15, line 29 as follows:

Other representative patterns are illustrated in Figures 6 – 8. Figure 6 illustrates a cotton boll pattern formed of ~~discreet~~ discrete shapes. Such a pattern could be employed when a relatively small bonding area is desired. For example about 7% of the surface area of the product sheet could be embossed using a pattern such as that illustrated in Figure 6.

These amendments correct the misspelling of the word “discrete” in the originally filed application, and do not add new matter to the specification as filed.

Claims

Please amend the claims as follows:

1-20. Withdrawn.

21. (Currently Amended) An embossed paper product comprising:

a base web, said base web having a basis weight of from about 6 lb/2880 sq. ft. ream to about 70 lb/2880 sq. ft. ream, said base web comprising pulp fibers; and a well-defined, decorative pattern embossed into said base web by means of heat and pressure applied at a heated embossing nip formed between a rigid pattern roll and a backing roll covered by a resilient elastomeric material into said base web, said pattern being defined by fiber bonding areas, said fiber bonding areas comprising regions where said pulp fibers have been bonded together by means of the heat and pressure applied at the heated embossing nip, said decorative pattern covering from about 2% to about 60% of the surface area of the base web, said decorative pattern extending to the central portion of the base web.

22. (Original) An embossed paper product as defined in claim 21, wherein said decorative pattern exhibits a glassine appearance.

23. (Original) An embossed paper product as defined in claim 21, wherein said embossed paper product is a tissue product.

24. (Original) An embossed paper product as defined in claim 23, wherein said pulp fibers comprise at least 80% by weight of said base web.

25. (Original) An embossed paper product as defined in claim 23, wherein said base web consists essentially of pulp fibers.

26. (Currently Amended) An embossed paper product as defined in claim 21, wherein said paper product comprises more than one ply and wherein said plies are bonded together within the fiber bonding areas by means of heat and pressure applied at the heated embossing nip.

27. (Original) An embossed paper product as defined in claim 21, wherein said base web has an absorbency of from about 5 grams H₂O/gram fiber to about 9 gram H₂O/gram fiber.

28. (Currently Amended) An embossed paper product as defined in claim 21, wherein said decorative pattern comprises a repeating pattern of ~~discreet~~ discrete shapes.

29. (Original) An embossed paper product as defined in claim 21, wherein said decorative pattern comprises a reticulated pattern.

30. (Cancel)

31. (Original) An embossed paper product as defined in claim 21, wherein said decorative pattern comprises from about 5% to about 30% of the total surface area of said base web.

32-46. Withdrawn.

47. (New) An embossed paper product as defined in claim 21, wherein the embossing nip is heated to a temperature which does not exceed about 500°F.

48. (New) An embossed paper product as defined in claim 21, wherein said pressure is applied at a load of less than about 500 pli.

49. (New) An embossed paper product as defined in claim 21, wherein the embossing nip is heated to a temperature between about 180°F and about 490°F.

50. (New) An embossed paper product as defined in claim 21, wherein said decorative pattern comprises between about 15% and about 20% of the total surface area of said base web.

51. (New) An embossed paper product as defined in claim 21, wherein said decorative pattern comprises between about 20% and about 30% of the total surface area of said base web.

52. (New) An embossed paper product as defined in claim 21, wherein said decorative pattern comprises between about 2% and about 15% of the total surface area of said base web.

53. (New) A multi-ply paper product comprising:
a first base web, said first base web having a basis weight of from about 6 lb/2880 sq. ft. to about 70 lb/2880 sq. ft., said first base web comprising pulp fibers;
a second base web, said second base web having a basis weight of from about 6 lb/2880 sq. ft. to about 70 lb/2880 sq. ft.; and

wherein said first and second base webs are bonded together and simultaneously embossed with a well-defined, decorative pattern by means of heat and pressure applied at a heated embossing nip formed between a rigid pattern roll and a backing roll covered by a resilient elastomeric material, said pattern being defined by fiber bonding areas, said fiber bonding areas comprising regions where said pulp fibers have been bonded together by means of the heat and pressure applied at the heated embossing nip, said decorative pattern covering from about 2% to about 60% of the surface area of the paper product and extending to the central portion of the paper product.

54. (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern exhibits a glassine appearance.

55. (New) A multi-ply paper product as defined in claim 53, wherein said multi-ply paper product is a tissue product.

56. (New) A multi-ply paper product as defined in claim 55, wherein said pulp fibers comprise at least about 80% by weight of said multi-ply paper product.

57. (New) A multi-ply paper product as defined in claim 55, wherein said multi-ply paper product consists essentially of pulp fibers.

58. (New) A multi-ply paper product as defined in claim 53, wherein said base web has an absorbency of from about 5 grams H₂O/gram fiber to about 9 gram H₂O/gram fiber.

59. (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern comprises a repeating pattern of discrete shapes.

60. (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern comprises a reticulated pattern.

61. (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern comprises from about 5% to about 30% of the total surface area of said base web.

62. (New) A multi-ply paper product as defined in claim 53, wherein said pressure is applied at a load of less than about 500 pli.

63. (New) A multi-ply paper product as defined in claim 53, wherein said pressure is applied at a load of between about 100 pli and about 400 pli.

64. (New) A multi-ply paper product as defined in claim 53, wherein the embossing nip is heated to a temperature of less than about 500°F.

65. (New) A multi-ply paper product as defined in claim 53, wherein the embossing nip is heated to a temperature between about 180°F and about 490°F.

66. (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern comprises between about 15% and about 20% of the total surface area of the multi-ply paper product.

67. (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern comprises between about 20% and about 30% of the total surface area of the multi-ply paper product.

68 (New) A multi-ply paper product as defined in claim 53, wherein said decorative pattern comprises between about 2% and about 15% of the total surface area of the multi-ply paper product.

Remarks

In view of the foregoing amendments and following remarks, reconsideration and allowance of the present application are respectfully requested.

In compliance with the Restriction Requirement, Applicants hereby elect without traverse to prosecute claims 21-31, drawn to an embossed paper product. As such, claims 1-20 and claims 32-46 are withdrawn as being drawn to non-elected inventions.

As a result of the withdrawal of claims 1-20 and 32-46, Applicants request a deletion of the following named inventors, as the named inventors' inventions are no longer being claimed in the presently pending application:

Geoffrey F. Carlow

Alexander F. Gunn

Timothy D. Ferguson

Daniel J. VanderHeiden

Roger E. Wendler, Jr.

The presently pending claims are generally directed to an embossed paper product. For instance, the paper product can comprise a base web which includes pulp fibers. The base web of the paper product includes a well-defined, decorative pattern which covers from about 2% to about 60% of the surface area of the web and extends to the central portion of the web. The decorative pattern of the products is embossed into the web by a combination of heat and pressure applied together at a heated embossing nip such that the pulp fibers of the web are bonded together. The embossing nip is formed between a rigid pattern roll and a backing roll covered by a resilient elastomeric material, commonly known as a rubber backing roll. The combination of the heat and pressure applied at the compliant nip allows for a well-defined, resilient embossment to be formed. The paper product of the present invention can include a single-ply web with the embossed decorative pattern or, alternatively, can be a multi-ply product including separate plies which have been simultaneously bonded together and embossed in the single heated embossing nip.

In order to illustrate the improved embossed product of the present invention, Applicants have included with this response photographs labeled Appendix A and

Appendix B. Appendix A shows four views of a single ply web which has been embossed in a heated nip formed between a rigid pattern roll and a rubber backing roll. As can be seen, the embossment is well-defined, and the fibers appear softened, flattened, and molded within the embossment with very little fiber degradation. Appendix B illustrates four views of a similar web which has been embossed in the same embossing nip, at the same nip pressure, but without the addition of heat in the nip. As can be seen, the definition of the embossment is not nearly as clear as compared to the embossment formed with a combination of heat and pressure. Moreover, the individual fibers, in addition to appearing less tightly bonded to each other, also show signs of breakage and degradation. Thus, the unique combination of heat and pressure at the compliant nip can produce unique fiber bonding areas in the webs of the present application defined by softened, molded fibers which can also exhibit less degradation as compared to the fibers of webs embossed in other processes.

In the Office Action, claims 21-31 were rejected under 35 USC §112, second paragraph, as being indefinite with regard to the claim terminology of lb/ream found in claim 21. In response, claim 21 has been amended to define the basis weight of the base web as being between about 6 lb/2880 sq. ft and about 70 lb/2880 sq. ft. Support for this amendment may be found at page 16 of the application as filed.

In the Office Action, claims 21-26, 28 and 30-31 were rejected under 35 U.S.C. §102(b) as being anticipated by McNeil, et al. (US 6,030,090).

McNeil, et al. is directed to a process for high pressure embossing a single ply paper and the paper produced thereby. The products of McNeil, et al. are embossed between a pattern roll and an anvil roll to produce embossments which do not extend outwardly from either side of the paper. According to McNeil, et al, a rubber anvil roll should generally not be used (col. 5, line 66), and, "[r]egardless of the materials used for construction, the anvil roll 32 must not deform during the embossing process" (col. 6,

lines 4-5). The embossed paper products of McNeil, et al. cannot be formed with a deformable anvil roll.

In contrast, the embossed webs of the present invention are embossed using a deformable anvil roll. As such, Applicant respectfully submits that the embossed paper products of claims 21-26, 28 and 30-31 patentably define over and are not anticipated by McNeil, et al., since, according to the reference itself, the products of McNeil, et al. can only be formed by utilization of a non-deformable roll and thus cannot anticipate the instant claims directed to paper products formed by utilization of a deformable roll.

In the Office Action, Claims 21-26 and 28 were rejected under 35 U.S.C. §102(b) as being anticipated by Palmer, et al. (US 3,323,983).

Palmer, et al. is directed to an embossing mechanism particularly suitable for embossing together lightweight paper plies. The mechanism utilizes a pair of embossing wheels, both of which are provided with spaced pegs on their periphery. The spaced pegs on one roll are provided with bosses on the end, while the spaced pegs on the mating roll are provided with mating grooves. The two rolls are driven in synchronism so that the ends of the pegs on one roll abut and mate with the ends of the pegs on the other roll as the two rolls rotate. A plurality of superposed plies of paper tissue are passed between the rolls and the mating pegs compress and fuse the fibers to emboss the tissue and fasten the tissue plies together (col. 2, lines 9-38). As the plies are passed between the rolls, the specific geometries of the bosses and the grooves mate to apply very high unit pressures (180,000 to 250,000 psi) on the tissues causing the fibers of the plies to interlock and be reduced to a plastic, with the individual paper fibers losing their identity, thereby knitting the plies together. Moreover, the sliding action of the surfaces of the bosses over the surfaces of the grooves help produce this knitting action. (Col. 4, lines 14-43.)

Applicants respectfully submit that claims 21-26 and 28 are not anticipated by Palmer, et al. For instance, in contrast to the webs of Palmer, et al., and as clearly evidenced by the accompanying photographs, the webs of the present invention are neither embossed so as to cause the individual paper fibers to lose their identity, nor are

they embossed so as to cause the fibers of the plies to knit together and interlock as defined by Palmer, et al., i.e., with the individual fibers losing their identity. In fact, the fibers of the embossments of the present application show very little degradation. As such, Applicants respectfully submit that the pending claims patentably define over Palmer, et al.

In the Office Action, Claims 21, 24, and 25 were rejected under 35 U.S.C. §102(b) as being anticipated by Ciaccia, et al. (US 4,257,842).

Ciaccia, et al. is directed to highly porous wallpapers comprising at least 10% thermoplastic polymer fibrils which have been sequentially heated and embossed. The wallpapers of Ciaccia, et al. are not embossed in a heated nip, as are the paper products of the present invention. Moreover, the wallpapers of Ciaccia, et al., are heavier than the paper products of the present application, with a basis weight of 150 gsm, which corresponds to a basis weight of 88 lb/2880 sq ft., which is greater than the paper products of the presently pending claims. As such, Applicants respectfully submit that claims 21, 24, and 25 patentably define over Ciaccia, et al.

In the Office Action, Claims 21, 23-26, and 28 were rejected under 35 U.S.C. §102(b) as being anticipated by Gresham, et al. (US 3,377,224).

Gresham, et al. is directed to a method for fixing together multiple plies of thin creped paper or wadding, which, due to its high bulk, is particularly useful for packing purposes. Accordingly, Gresham, et al. utilizes an embossing wheel including a peripheral pattern of spaced bosses that are operative to provide very high unit pressures to give good ply attachment without substantial cutting of the material on the lines of embossing. (col. 1, lines 1-50). The pattern of the embossing wheel includes a central groove and spaced grooves extending parallel to the axis of the wheel. The peripherally extending groove and the transversely extending grooves define substantially flat protrusions or bosses adjacent opposite sides of the disc of the embossing wheel. Each of the bosses is preferably square and 1/32 x 1/32 inch in size (col. 2, lines 23-49). According to Gresham, et al. it is this very specific pattern of

bosses which provides the good ply attachment in the multiply paper product (col. 1, line 42-43). Thus, the pattern embossed on the paper is a functional, peripheral pattern designed specifically for the purpose of bonding together the plies of the differently creped tissue paper of Gresham, et al. to form a packing material.

In contrast, the decorative pattern of the claimed products covers from about 2% to about 60% of the surface area of the products and extends to the central portion of the product, as can be seen, for example, in Figure 4 of the originally filed application.

As such, and for at least these reasons, Applicants respectfully submit that claims 21, 23-26, and 28 patentably define over Gresham, et al.

In the Office Action, Claim 27 was rejected under 35 U.S.C. §103(a) as being unpatentable over McNeil, et al. in view of Salman, et al. (US 6,077,390).

Salman, et al. is directed to calendered and embossed tissue products. As correctly pointed out in the Office Action, Salman, et al. discloses a tissue paper with an absorbency between 5-9 grams water per gram of fiber. McNeil, et al., as discussed above, discloses an embossed paper product which can only be formed between a pattern roll and a non-deformable anvil roll. However, any proper combination of Salman, et al. with McNeil, et al., would still fail to disclose or suggest the paper products of the present application, including the paper products of claim 27.

Specifically, any combination of Salman, et al. with McNeil, et al., would still fail to disclose an embossed paper product with an absorbency from about 5 g/g to about 9 g/g comprising a decorative pattern covering between about 2% and about 60% of the surface area and extending to the central portion of the paper product that is embossed by means of heat and pressure applied at a heated, compliant embossing nip such that the pulp fibers in the fiber bonding areas are bonded together. As such, Applicants respectfully submit that claim 27 patentably defines over McNeil, et al. in view of Salman, et al.

In the Office Action, Claims 21, 23-26, and 28 were rejected under 35 U.S.C. §102(e) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Hollmark, et al. (US 6,454,905).

Hollmark, et al. is directed to a paper web which has been subjected to sequential impulse drying steps. The webs of Hollmark, et al. include a combination of patterning effects which cannot be provided in one single press nip. The products of the present invention, in contrast, can be patterned in a single embossing nip.

In addition, Hollmark, et al. uses the term 'press moulding' to describe the three-dimensional shaping of the paper that occurs simultaneously with the impulse drying, so as to differentiate themselves from embossing processes. (Col. 3, lines 59-65). The products of the present invention, however, are embossed, as the term is defined by Hollmark, et al. (shaping performed on dried paper).

Also, according to Hollmark, et al., the combination of drying with thermobonding and pattern embossing which occurs in one and the same step in Hollmark, et al. provides a product with a different structure and different degrees of inner stress than occurs in papers wherein the paper is first dried (col. 5, lines 30-36). As such, Applicants respectfully submit that claims 21, 23-26, and 28 are neither anticipated by nor obvious over Hollmark, et al., as the reference itself has clearly differentiated the impulse dried products from embossed products, which would include the embossed products of the present invention.

In the Office Action, Claims 21-26, and 28-31 were rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Lee, et al. (US 3,625,791).

Lee, et al. is directed to paper products suitable for use as a substitute for cloth products such as clothing, disposable diapers, disposable bed sheets and disposable pillow cases. The paper products of Lee, et al. are formed by bonding one ply of the multi-ply products with another with use of sufficient pressure to crush the fibers of the respective plies. The embossing must be performed under great pressure sufficient to crush the individual fibers and cause them to flow together (col. 5, lines 33-37).

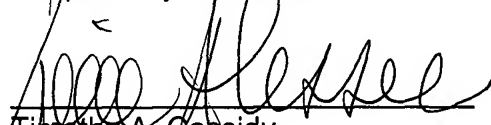
Rather than being crushed to the point of flowing together as in the products of Lee, et al., the products of the present invention include a well-defined embossed pattern defined by fiber bonding areas where pulp fibers have been bonded together by means of heat and pressure applied at the compliant embossing nip. As can be clearly seen in the accompanying Appendix A, the fibers of the webs of the present application appear flattened, molded and bonded. The fibers are not crushed, however, and in fact exhibit very little fiber degradation at all. As such, Applicants respectfully submit that claims 21-26 and 28-31 patentably define over Lee, et al.

In summary, it is respectfully submitted that the presently pending claims patentably define over the prior art of record. In particular, Applicants submit that none of the cited art disclose or suggest the paper products of the present invention which include a well-defined, decorative pattern covering between about 2% and about 60% of the surface area of the web and extending into the central portion of the web that is embossed into a base web by means of heat and pressure applied at a heated embossing nip formed between a rigid pattern roll and a backing roll covered by a resilient elastomeric material. It is believed that the present application is complete condition for allowance and favorable action, therefore, is respectfully requested. Should any issues remain after consideration of this Amendment, however, Examiner Hug is invited and encouraged to telephone the undersigned at his convenience.

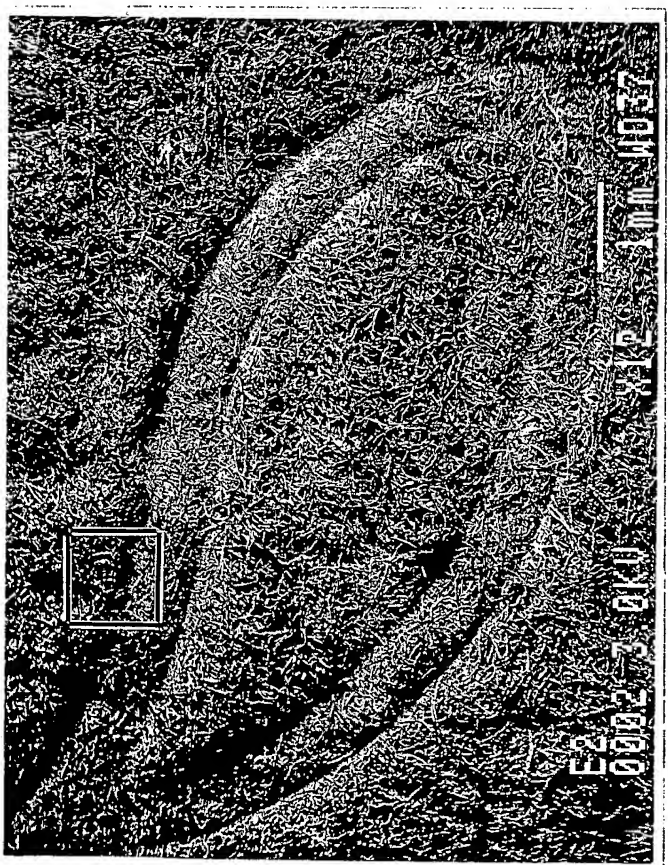
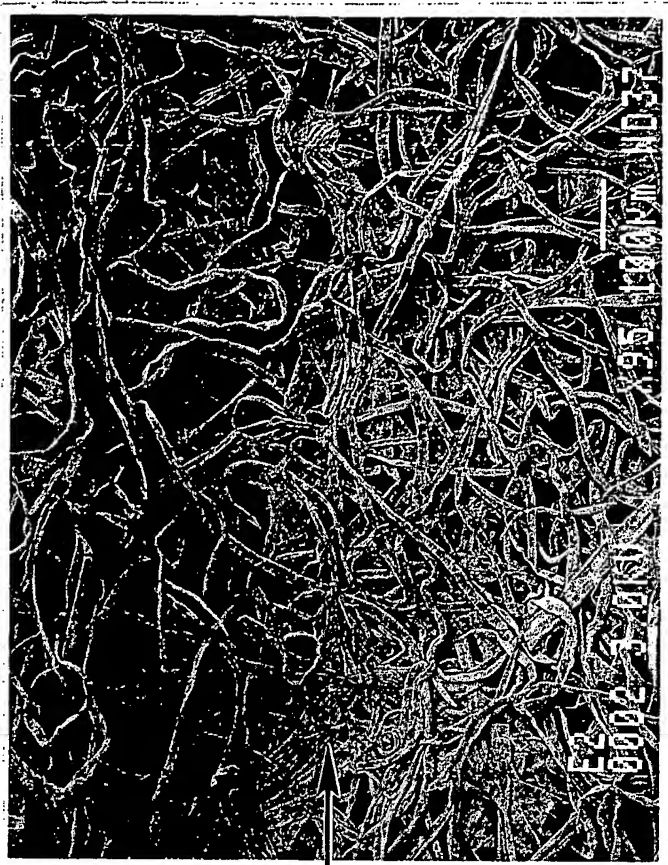
Please charge any additional fees required by this Amendment to Deposit Account No. 04-1403.

7/23/03
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